except at a few stations. In Kentucky the number of days with snow and the total fall for the month were both notably small, while over all the district south of that State, except in the elevated sections of southwestern Virginia, no measurable amount of snow fell at any station.

The most important precipitation periods were (1) the 3d–4th, when moderately heavy rains fell over southern sections, rain and snow in Kentucky and snow over northern and eastern sections; (2) the 11th–12th, when heavy rains again fell over southern sections and rain or snow or both over central and northern sections; (3) the 20th–22d, when rains were general over the district but heavy only in western North Carolina; and (4) the 26th–28th, when precipitation, mostly rain, was general and heavy over the entire Ohio River Basin. Excessive 24-hour rainfalls occurred the 26th–27th at a majority of the stations in northern Alabama, at many stations in Tennessee, and at several stations in North Carolina.

MISCELLANEOUS.

Thunderstorms were quite general in Tennessee, northern Alabama, and western North Carolina during the 26th–27th. Also a thunderstorm occurred at Mount Sterling, Ky., the 22d. No damage resulted from any of these storms, except that excessive rainfall washed farm lands in some localities in Tennessee and Alabama, and small streams were put over their banks; also lightning struck and partly destroyed a residence at Roberson Fork, Tenn. Sleet storms on the 27th and 28th caused considerable trouble, mostly to telephone and other electric service wires, in the north-central counties of Ohio.

RIVERS AND FLOODS.

The water in the lower Ohio River and in a few of its lower tributaries near their mouths was above flood stage at the beginning of the month, the January floods not having run out in those sections. But by the 8th the flood waters had subsided even at Cairo. The flood damage in the Cairo River district is estimated to be $350,000, and in the Evansville district about the same amount.

THE HUMIDITY OF AIR IN MINES.

By S. O. ANDROS,

Mining Engineer, Field Assistant, Department of Mining Engineering, University of Illinois.

The character of mine air is one of the numerous problems which have been studied by the Illinois State Coal Mining Investigation. This investigation has been carried on during the past two years by the Department of Mining Engineering of the University of Illinois acting in cooperation with the United States Bureau of Mines and the State Geological Survey of Illinois.

It had been assumed previously that in winter the ventilating current in a mine absorbed moisture from the coal dust on the ribs, roof, and floor of entries and thereby rendered this dust more explosible. It also had been assumed that in summer approximately as much moisture was deposited in a mine as was extracted in winter. These assumptions were based on the theory that the degree of saturation of aqueous vapor varies directly with the temperature. Outside air with 100 per cent relative humidity at a temperature of 20° F. after entering a mine and having its temperature raised to the average winter mine temperature of 62° F., has only 20.1 per cent relative humidity.

To determine precisely the amount of moisture extracted or deposited by the ventilating current, hygrometers were installed in 20 mines in the State and for 12 months three readings a day were taken from each hygrometer. Two hygrometers were installed in each mine; one in the intake and one in the return. The United States Weather Bureau cooperated in the study of this problem, installing hygrographs at five of its stations. These stations were so situated geographically that the bihourly hygrometric records from them furnished data on the condition of the outside air in all mining districts in the State.

The hygrograph and hygrometer readings show that the amount of moisture deposited by the ventilating current in summer does not equal the amount extracted in winter. The coal dust in a mine becomes drier each year. This fact is well illustrated by the following records chosen at random from mine No. 70. Approximately 100,000 cubic feet of air per minute passes through this mine. For the week beginning March 17, 1912, an average of 9,861 gallons of water per 24 hours was extracted from the mine by the ventilating current. For the week beginning August 18, 1912, an average of 2,698 gallons of water per 24 hours was deposited in the mine.

It was hoped that the work of calculation might be shortened if from the bihourly hygrometric data supplied by the United States Weather Bureau stations some 2 hours could be determined whose average temperature and humidity closely approximated the average temperature and humidity for the 24 hours. After repeated trials it became evident that for Illinois no such approximation could be made but that any occasional coincidence between the average relative humidity and temperature for 24 hours and the average of any 2 selected hours such as 8 a. m. and 8 p. m. was purely accidental.

Reports on the work done may be obtained, when published, from the Illinois State Coal Mining Investigation, 126 Natural History Building, Urbana, Ill.